



Synopsis of Previous Workshops

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Presentation Outline

- Background
- First Workshop
 - Synopses of First Workshop
 - Best Practices from First Workshop
- Second Workshop
 - Synopses of Second Workshop
 - Best Practices from Second Workshop Workshop 1
- Moving forward
- Summary



Background

- Workshops have been instrumental in bringing best practices together
- Researchers exchanged ideas and discuss differing points of view
- What worked, what did not work, how to share information?
- An excellent forum for focused discussions
- We capture lessons learned



First Workshop: RT HITL Simulations

- Purpose was to gather information for best practices for real time human-in-the-loop simulations
 - Promote exchange of ideas and techniques concerning concept validation
 - 33 expert practitioners (14 Europeans and 19 US participants)
 - Developed a Best Practice paper
 - Available on http://www.tc.faa.gov/acb300/ap5_workshops/workshop_home.htm
 - FAA WJHTC, Atlantic City (Ocean Life Center), March 19-21, 2002



Synopses of First Workshop

- Role of HITL exercises in the validation process
- General overview of HITL process
- Managing HITL validation exercises
- Scope and fidelity considerations
- Experimental design considerations
- Airspace and scenario characteristics
- Subjective and objective data collection
- Sources of error and variance
- Statistical and operational significance of results



Synopses of First Workshop

- **ATM initiative and validation need**
 - Development of DSTs, procedures, advanced concepts, new hardware/software, advanced technology
 - Focus of validation may be different depending on the type of initiative



Synopses of First Workshop

- **Validation techniques**
 - Concept/paper/analytical studies,
 - Task analysis,
 - Storyboarding,
 - Cognitive walkthroughs,
 - Fast-time modeling/simulations,
 - Rapid prototyping,
 - Surveys and interviews,
 - RT HITL (part-task, full-mission, shadow mode, operational trials)



Synopses of First Workshop

- **Validation Road Maps**
 - Banana model
 - Spiral model, etc.
- **Choosing simulator and fidelity assessment**
 - Presented a few methods (objective and subjective) for fidelity assessment



Resulting Best Practices: First Workshop

- **Best Practices BEFORE HITL Exercise**
 - Managing the process
 - Experimental design considerations
 - Airspace and scenario development considerations
- **20 Best Practices**



Resulting Best Practices: First Workshop

- **Best Practices DURING the HITL Exercises**
 - Managing the process
 - Experimental design considerations
 - Subjective and objective data
 - Validation data storage



Resulting Best Practices: First Workshop

- **Best Practices AFTER the HITL Exercise**
 - Managing the aftermath of HITL process
 - Statistical and Operational Significance



FOND MEMORIES Of WORKSHOP 1



Second Workshop: Fast-time and Real-time Simulation

- Purpose was to gather information for best practices for fast-time and real time human-in-the-loop simulation (specific attention to Scenarios)
 - Promote exchange of ideas and techniques concerning fast-time and RT HITL simulations
 - 52 expert practitioners (32 Europeans and 20 US participants)
 - Developed a Best Practice paper
 - Available on http://www.tc.faa.gov/acb300/ap5_workshops/workshop_home.htm
 - Rome, ENAV/ACC, March 11-13, 2003



Synopses of Second Workshop

- **Coordination of fast-time and real-time human-in-the-loop simulation activities**
- **Scenario uses**
- **Scenario considerations**
- **Traffic building**
- **Specific event scripting**
- **Analysis considerations**



Synopses of Second Workshop

- **Scenario definitions**
 - Operational scenario: sequence of events involving one or more actors that is focused on some specific ATM functions/procedure
 - Validation scenario: representation of the events, actors, and interactions of operational scenario applied in the simulation environment
- **Objective is to excite performance and interactions**
- **Simulation environment – airspace, traffic sample, weather, failure modes, and any other controllable variable**



Synopses of Second Workshop: Scenarios

- **Scenarios and Maturity Levels**
 - Establishment of concept principles
 - Proof of concepts
 - Concept integration and pre-ops trials
- **Scenario Objectives**
 - Exploration
 - Demonstration
 - Usability Testing
 - Operational trials



Synopses of Second Workshop: Scenario Design Steps

- **Clearly define simulation objectives**
- **Identify and prioritize appropriate metrics/evaluation criteria**
- **Determine relevant scenario characteristics**
- **Determine assumptions and limitations**
- **Identify data management and analysis requirements**
- **Prepare detailed reports**



Resulting Best Practices: Second Workshop

- **Coordination of fast-time and real-time simulation activities**
 - Data sharing and re-use
 - Research needs – incorporate human side more into fast-time modeling (e.g., collaborative decision making)
- **Scenario development considerations**
 - Allow research questions to drive needs
- **Traffic building**
- **Specific event scripting**
- **Role of Validation Data Repository**



FOND MEMORIES Of WORKSHOP 2



Moving Forward

- Several lessons learned – update them as necessary
- Use VDR to share them
- We need to continue AP5/9 workshops for additional topics



Summary

- Previous workshops allowed us to exchange different perspectives and ideas
- We developed best practices
- Continued cooperation and collective best practice development would benefit all